

WHAT IS CLAIMED IS:

1. A method of fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple feature sets arranged successively in the first direction within the array, using a head system having multiple successive sets of dispensers, the method comprising:

advancing the head system in the first direction over the substrate while dispensing drop sets for each array from dispenser sets in an order the reverse of that from which the dispenser sets pass over a given location on the substrate as the head system advances in the first direction, with each dispenser set depositing a drop set at a distance ahead of a drop set deposited by a preceding dispenser set which is less than the distance to the successive drop dispenser set which deposits the next drop set, so as to form the arrays.

2. A method according to claim 1 wherein the distance between adjacent feature sets within the arrays is less than the distance between adjacent dispenser sets.

3. A method of fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple feature sets arranged successively in the first direction within the array, using a head system having multiple successive sets of dispensers, the method comprising:

advancing the head system in the first direction over the substrate while dispensing drop sets for each array, from dispenser sets so as to form the arrays with a first feature set spacing between adjacent arrays which is less than the spacing of the dispenser sets which formed the arrays.

4. A method according to claim 1 wherein the feature sets extend in a direction transverse to the first direction, the method additionally comprising moving the head in the transverse direction and dispensing the drop sets in co-ordination with such transverse movement so as to deposit drops along such feature sets.

5. A method of fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple feature sets arranged successively in the first direction within the array, using a head system having multiple successive sets of dispensers, the method comprising
 - (a) while the head system is in one position in the first direction, depositing drop sets from different dispenser sets for feature sets of different positions within multiple arrays;
 - (b) advancing the head system in the first direction to a next position;
 - (c) repeating steps (a) and (b) for successive feature sets within the arrays using for each of those feature sets during a cycle, a corresponding dispenser set which deposited at a same feature set position of a previous array in step (a) during a previous cycle, so as to form the arrays.
6. A method according to claim 5 wherein the feature sets extend in a direction transverse to the first direction, the method additionally comprising moving the head in the transverse direction during step (a) and dispensing the drop sets in co-ordination with such transverse movement so as to deposit drops along such feature sets.
7. A method according to claim 1 wherein at least three of the successively arranged arrays are fabricated each with at least three features sets.
8. A method according to claim 1 wherein at least five of the successively arranged arrays are fabricated each with at least five feature sets.
9. A method according to claim 1 wherein the drop sets contain biopolymers or biomonomers.
10. A method according to claim 9 wherein the drop sets contain polynucleotides, peptides, nucleotides, or amino acids.
11. A method according to claim 1 wherein:

the dispenser sets are arranged successively in the first direction with each set having multiple dispensers arranged successively within the set in a direction transverse to the first direction; and

each feature set has multiple features arranged successively in the transverse direction.

12. A method of fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple rows of feature arranged successively in the first direction within the array, using a head system having multiple successive rows of dispensers, the method comprising:

advancing the head system in the first direction over the substrate while dispensing rows of drops for each array, from dispenser sets in an order the reverse of that from which the dispenser sets pass over a given location on the substrate as the head system advances in the first direction, with each dispenser set depositing a drop set at a distance ahead of a drop set deposited by a preceding dispenser set which is less than the distance to the successive drop dispenser set which deposits the next drop set, so as to form the arrays.

13. A method according to claim 12 wherein the distance between adjacent rows of features within the arrays is less than the distance between adjacent dispenser rows.

14. A method according to claim 12 wherein the advancing and dispensing comprises:

- (a) while the head system is in one position in the first direction, depositing rows of drops from different dispenser rows for rows of features of different positions within multiple arrays;
- (b) advancing the head system in the first direction to a next position;
- (c) repeating steps (a) and (b) for successive rows of features within the arrays using for each of those feature rows during a cycle, a corresponding dispenser row which deposited at a same row position of a previous array in step (a) during a previous cycle.

15. A method according to claim 13 wherein at least five of the successively arranged arrays are fabricated each with at least five feature sets.

16. A method according to claim 13 wherein the dispensed rows of drops contain polymers.
17. A method according to claim 13 wherein the same row of dispensers dispenses the rows of drops which rows are the of the same composition for each of multiple arrays.
18. A method according to claim 17 wherein at least some of the drops within a dispensed row are of a different composition from one another.
19. A method according to claim 17 wherein the drops of the dispensed rows contain polynucleotides, peptides, nucleotides, or amino acids.
20. An apparatus for fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple feature sets arranged successively in the first direction within the array, the apparatus comprising:
 - (a) a head system with multiple successive sets of dispensers;
 - (b) a transport system to advance the head system in the first direction with respect to a substrate;
 - (c) a processor communicating with the head system and transport system to advance the head system in the first direction over the substrate while dispensing drop sets for each array, from dispenser sets in an order the reverse of that from which the dispenser sets pass over a given location on the substrate as the head system advances in the first direction, with each dispenser set depositing a drop set at a distance ahead of a drop set deposited by a preceding dispenser set which is less than the distance to the successive drop dispenser set which deposits the next drop set, so as to form the arrays.
21. An apparatus according to claim 20 wherein the distance between adjacent feature sets within the arrays is less than the distance between adjacent dispenser sets.
22. A method according to claim 20 wherein the advancing and dispensing comprises:
 - (a) while the head system is in one position in the first direction, depositing drop sets from different dispenser sets for feature sets of different positions within multiple arrays;

- (b) advancing the head system in the first direction to a next position;
- (c) repeating steps (a) and (b) for successive feature sets within the arrays using for each of those feature sets during a cycle, a corresponding dispenser set which deposited at a same feature set position of a previous array in step (a) during a previous cycle.

23. A method comprising forwarding results or processed results from interrogating an array fabricated by the method of claim 1, to a remote location.

24. An apparatus according to claim 20 wherein the feature sets are rows of features, the sets of dispensers are rows of dispensers, and the dispensed drop sets are rows of drops.

25. An apparatus according to claim 23 wherein the dispensers are pulse jets.

26. A computer program product for use with an apparatus for fabricating multiple arrays arranged successively in a first direction on a substrate and each having multiple feature sets arranged successively in the first direction within the array, which apparatus has:

- (i) a head system with multiple successive sets of dispensers;
 - (ii) a transport system to advance the head system in a first direction with respect to a substrate; and
 - (iii) a processor communicating with the head system and transport system;
- the computer program product comprising a computer readable storage medium having a computer program stored thereon which, when loaded into the processor, performs the steps of:

advancing the head system in the first direction over the substrate while dispensing drop sets for each array from dispenser sets in an order the reverse of that from which the dispenser sets pass over a given location on the substrate as the head system advances in the first direction, with each dispenser set depositing a drop set at a distance ahead of a drop set deposited by a preceding dispenser set which is less than the distance to the successive drop dispenser set which deposits the next drop set, so as to form the arrays.

27. A computer program product according to claim 26 wherein the distance between adjacent feature sets within the arrays is less than the distance between adjacent dispenser sets.

28. A computer program product according to claim 26 wherein the advancing and dispensing comprises:

- (a) while the head system is in one position in the first direction, depositing drop sets from different dispenser sets for feature sets of different positions within multiple arrays;
- (b) advancing the head system in the first direction to a next position;
- (c) repeating steps (a) and (b) for successive feature sets within the arrays using for each of those feature sets during a cycle, a corresponding dispenser set which deposited at a same feature set position of a previous array in step (a) during a previous cycle.